Claims

We claim:

1. A suitable host cell transfected with an isolated nucleic acid molecule comprising a sequence of nucleotides or ribonucleotides that encodes an α_7 subunit of a human neuronal nicotinic acetylcholine receptor.

2. A recombinant non-human *cell line* which has been engineered to express a heterologous protein, said cell line comprising a host cell transformed or transfected with a heterologous nucleic acid molecule comprising a sequence of nucleotides or ribonucleotides that inducibly express an α_7 subunit of a human neuronal nicotinic acetylcholine receptor.

3. The cell line acording to claim 1, wherein the cell line is derived from rat pituitary tumour tissue.

4. The cell line accoding to claim 1 wherein the heterologou sprotein is a functional human neuronal nicotinic acetylcholine receptor.

5. The cell line according to claim 1,further comprising a marker gene, wherein expression of the marker gene indicates expression of the heterologous protein.

6. The cell line according to claim 1, wherein the heterologous nucleic acid molecule is contained within an expression vector.

7. An isolated cell transformed or transfected with a sequence of nucleotides or ribonucleotides under conditions favoring cell surface expression of a functional neuronal nicotinic acetylcholine receptor that contains at least one α and at least one β subunit.

8. The isolated cell according to claim 7 wherein the isolated cell expresses a functional neuronal nicotinic acetylcholine receptor that comprises a multimeric subunit combination, wherein said multimeric subunit combination is defined by the general formula $\alpha_X\beta_Y\beta_Z$, where X is at least one member selected from the group consisting of α_1, α_2 α_3 α_4 α_5 α_6 and α_7; Y is at least one member selected from the group consisting of β_2, β_3 and β_4 and Z is selected from the group consisting of β_2, β_3 and β_4.

9. The isolated cells according to claim 8 wherein the functional neuronal nicotinic acetylcholine receptor contains at least one of the following subunit combinations selected from the group consisting of $\alpha2\beta4\alpha6$; $\alpha3\beta4\alpha6$; $\alpha4\beta4\alpha5$; $\alpha4\beta4\alpha6$; $\alpha4\beta2\alpha5$; $\alpha4\beta2\beta3$; $\alpha3\beta2\alpha6\beta3$; $\alpha2\beta4\alpha5$; $\alpha2\beta2\alpha5$; $\alpha3\beta2\alpha5$; $\alpha3\beta4\alpha5$.

10. The isolated cells according to 8 claim wherein the functional neuronal nicotinic acetylcholine receptor contains at least one of the following subunit combinations selected from the group consisting of $\alpha2\beta2\alpha6$; $\alpha3\beta2\alpha6$; $\alpha4\beta2\alpha6$.

11. The isolated cell according to 8 wherein said cell expresses a functional neuronal nicotinic acetylcholine receptor that comprises a multimeric subunit combination, wherein said multimeric subunit combination is defined by the general formula $\alpha_X\beta_2\beta_4$, where X is one or more of α_1, α_2 α_3 α_4 α_5 α_6 or α_7.

12. The isolated cells according to 8 claim wherein the functional neuronal nicotinic acetylcholine receptor contains a multimeric subunit combination defined by the formula $\alpha_X\beta_2\beta_3$, where X is one or more of α_1, α_2 α_3 α_4 α_5 α_6 or α_7.

13. The isolated cell according to claim 6 wherein said cell expresses a functional neuronal nicotinic acetylcholine receptor that comprises a multimeric subunit combination, wherein said multimeric subunit combination is defined by the general formula $\alpha_X\beta_2\beta_3$, β_4, where X is one or more of α_1, α_2 α_3 α_4 α_5 α_6 or α_7.